Abstract Submitted for the NWS09 Meeting of The American Physical Society

Terahertz Properties of an Organic Nonlinear Optical Crystal ANDREW JAMESON, JOSEPH TOMAINO, YUN-SHIK LEE, Department of Physics, Oregon State University, Corvallis, OR 97331-6507, JI-YOUN SEO, O-PIL KWON, Department of Molecular Science and Technology, Ajou University, Suwon 443-749, Korea — As a result of the findings that organic nonlinear crystals, e.g., DAST, have remarkably large nonlinear optical coefficients in the THz region, rigorous investigations have been conducted for efficient THz generation and detection using these material systems. We performed THz experiments on a new type of hydrogen-bonded organic nonlinear crystal, 2-[3-(4-hydroxystyryl)-5,5-dimethylcyclohex-2-enylidene]malononitrile (OH1). First, we demonstrated the generation of strong single-cycle THz pulses using optical rectification in an OH1 crystal. The output power reached up to a few microwatts. Second, we measured transmission spectra of the sample in the THz region using THz time-domain spectroscopy. We indentified several vibrational resonances from 0.8-2.1 THz. These preliminary experimental data on OH1 show much promise for future use as a THz source, as well as being readily adaptable to many nonlinear studies because of its high nonlinearity and easily accessible vibrational resonances in the THz region.

> Andrew Jameson Dept of Physics, Oregon State University, Corvallis, OR 97331-6507

Date submitted: 13 Apr 2009

Electronic form version 1.4